REMARKS

Upon entry of the present amendment, claim 1 will be amended, and claims 6-20 will be added. Claims 1-20 will be pending, with claim 1 being the sole independent claim.

Claim 1 has been amended herein without expressing agreement and/or acquiescence with the rejections of record, and is merely being made in an attempt to advance the present application to allowance. In particular, the amendment herein is made in accordance with language discussed with the Examiners during an October 20, 2009 interview (with a statement regarding the interview being presented below).

Regarding support for a pressure of 350 to 500 Torr recited in newly-added claims 6-8, attention is directed to Applicants' specification at page 7, lines 16- 25.

Applicants note that the claims have been amended herein in accordance with the Examiners' suggestion during an October 20, 2009 telephone interview in order to advance prosecution of the application to allowance. However, Applicants preserve their right to file one or more continuation and/or divisional applications directed to claims as pending prior to the instant amendment and/or to include other amendments and to present arguments for patentability in the event that the claims are rejected.

Reconsideration of the rejections of record, and allowance of the application in view of the following remarks are respectfully requested.

Statement of Interview

Applicants express appreciation for the courtesies extended by Supervisory Patent Examiner Roy King and Examiner Caitlin Fogarty during an October 20, 2009 telephone interview with Applicants' representative Arnold Turk.

During the interview, Applicants' representative presented arguments as included in the response filed April 30, 2009, including that the magnesium starting material does not include REM. In support of the lack of inclusion of REM, the Examiners were referred to Applicants' Examples 1 and 2 wherein the Mg is added as Mg or Mg_2Ni as compared to being added with REM in the comparative Examples. The Examiners indicated that literal support is needed in the original disclosure to recite broad language regarding the lack of inclusion of REM in the magnesium starting material. In response, Applicants' representative indicated that *ipsis verbis* support is not required. It was noted that all that is required is sufficient disclosure as to support the claim language, and that the totality of Applicants' specification including the Examples support such subject matter.

The Examiners did note that the inclusion of the specific materials recited in the Examples should define Applicants' claimed subject matter over the prior art used in the rejection. In particular, the Examiners indicated that amendment of claim 1 to recite that the magnesium starting material comprises Mg or Mg_2Ni should avoid the rejections of record.

Applicants' representative additionally argued patentable differences based upon pressures recited in Applicants' claims. However, the Examiners contended that vacuum disclosure in the prior art would apparently inherently include Applicants' recited range even without disclosure of pressures in the prior art.

Rejections

The following rejections are set forth in the Office Action.

(a) Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-226722.

(b) Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-226722.

In response to these grounds of rejection, Applicants note that independent claim 1 is presently directed to a method of producing a Mg-REM-Ni based hydrogen-absorbing alloy, comprising a first step of melting a rare earth element starting material having a low evaporation pressure and a nickel starting material in a melting furnace to obtain a melt of REM-Ni alloy; a second step of adding magnesium starting material to the melt of REM-Ni alloy, the magnesium starting material comprising Mg or Mg_2Ni, and keeping a pressure inside the melting furnace at a given level to obtain a melt of Mg-REM-Ni alloy; and a third step of cooling and solidifying the melt of Mg-REM-Ni alloy at a given cooling rate. Accordingly, as appeared to be agreed to by the Examiners during the above-noted interview, independent claim 1 and the claims dependent therefrom should be indicated to be patentable over JP '722.

JP '722 discloses a method of melting in paragraph [0016] wherein a rare earth-Mg system alloy is prepared first, which is supplied to nickel molten metal or a rare earth-nickel alloy molten metal, and the hydrogen storing metal alloy of a requested presentation is prepared. Moreover, claim 1 of JP '722 includes that a rare earth-magnesium-nickel alloy of the requested presentation is prepared by adding a rare earth-magnesium alloy to the nickel melt or rare earth-nickel alloy.

As previously pointed out by Applicants in their response filed April 30, 2009, the method disclosed by JP '722 is simply illustrated as follows.

Ni melt or REM-Ni alloy melt →Mg-REM-Ni alloy melt
↑
REM-Mg alloy is added

To the contrary, the melting method of the present invention, as recited in independent claim 1, is directed to a method of obtaining a Mg-REM-Ni alloy melt by melting a rare earth element starting material and a nickel starting material in a melting furnace to obtain a melt of REM-Ni alloy at a first step, then adding a magnesium starting material comprising Mg or Mg_2Ni to the melt of REM-Ni alloy at a second step, and at the same time keeping pressure inside the melting furnace at a given level .

This is simply illustrated as follows.

REM-Ni alloy melt →Mg-REM-Ni alloy melt
↑
Mg starting material addition is added

In other words, the melting method of JP '722 is a technique of manufacturing a REM-Mg system alloy having a low melting point (600-1000°C) in advance, using it as an additional starting material to lower the temperature of a REM-Ni series alloy melt and control composition change caused by evaporation of Mg, and thus obtaining a Mg-REM-Ni alloy of the requested composition.

In contrast, the present invention discloses the technique of melting REM starting material and Ni staring material to obtain REM-Ni alloy melt, adding Mg starting material comprising Mg or Mg_2Ni, further setting the alloy melting temperature at the time of Mg starting material being added as the appropriate range, controlling the pressure in the melting furnace after Mg starting material is

added so that the alloy melting temperature could be controlled in the appropriate range and that the evaporation of Mg could be inhibited, and thus obtaining the desired Mg-REM-Ni alloy.

With respect to the above, the Examiner's attention is directed to, for example, Applicants' specification at page 7, first two full paragraphs, wherein it is disclosed that:

> In this case, the temperature of the melt is required to be kept within the above temperature range even after the addition of the magnesium starting material. However, the inside of the furnace after the addition of Mg is filled with the Mg vapor, so that it is very difficult to visually confirm the temperature of the melt by inserting a thermocouple or the like into the melt. In the invention, therefore, the pressure inside the melting furnace is controlled instead that the temperature inside the melting furnace is kept within the above temperature range to provide substantially the same melting condition as in the temperature range.
>
> Moreover, FIG. 1 is a graph showing a relation between the pressure inside the melting furnace and the temperature of the melt. That is, when the pressure inside the furnace is controlled by an output load of the melting furnace for controlling the temperature of the melt to the above range, the temperature of the melting atmosphere can be naturally controlled to the above range, which renders the control of accurate magnesium composition. In this case, the pressure inside the furnace corresponding to the temperature range is 350-500 Torr as seen from FIG. 1.

Japan '722 does not disclose a second step of adding magnesium starting material comprising Mg or Mg_2Ni to the melt of REM-Ni alloy and keeping a pressure inside the melting furnace at a given level to obtain a melt of Mg-REM-Ni alloy.

Furthermore, the present invention discloses the method of obtaining the desired compound alloy of high precision by melting Mg have high vapor pressure and a metal having a higher melting point than Mg. In contrast, JP '722 includes the premise that the corresponding alloy, i.e., REM-Mg alloy, already exists and does not provide disclosure how to obtain this alloy. Accordingly, for this additional reason, the rejections are without appropriate basis and should be withdrawn.

Regarding the pressure in the melting furnace, the Examiner admits in paragraph (b) on page 4 of the Final Office Action that JP '722 does not disclose this feature, but contends that it is an inherent feature of the method of JP '722 since the furnace is maintained in a vacuum state and elements are maintained in the melted state. However, JP '722 does not describe the pressure inside the furnace at the time of melting, but describes in examples melting of the rare earth-Mg system alloy that molten raw material is thrown in a crucible, and after carrying out full evacuation of the inside of a melting furnace, argon gas is introduced to 0.1 MPa (750 Torr) in the furnace for dissolution, see [0040] and [0046] of the specification. That is, JP '722 does not carry out melting under vacuum but under pressure of 0.1 MPa (750 Torr).

In this connection, when Mg is melted under pressure of 0.1MPa (750 Torr), as understood from Fig. 1 of the specification of the present application, a molten bath temperature becomes not less than 1500°C and cannot prevent transpiration of Mg.

Thus, Applicants submit that there is no teaching or suggestion in 'JP '722 of each and every feature of Applicants' independent claim 1 or the claims dependent therefrom so that rejection is without appropriate basis and should be withdrawn.

Moreover, Applicants submit that one having ordinary skill in the art would not have modified JP '722 in the manner asserted in the obviousness rejection of claims 2-5. In this regard, Applicants submit that the obviousness rejection is using improper hindsight based upon Applicants' disclosure in an attempt to arrive at Applicants' claimed subject matter. However, one having ordinary skill in the art would not arrive at Applicants' claimed subject matter at least for the reasons set forth above.

Therefore, the rejections of record should be withdrawn, and the Notices of Allowance and Allowability should be mailed.

CONCLUSION

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the objection and rejections of record, and allow each of the pending claims.

Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

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